**BACKGROUND**

5-HT₂₆ receptors are known to play a role in impulsivity-related behavior. However, clarifying the possible role of the HTR1A gene in human impulsivity has rarely been attempted. It has been suggested that the C(1019)G polymorphism regulates the HTR1A gene expression through altered control of the promoter in prefrontal cortex neurons. The polymorphism is located in a 26-bp palindrome region recognized by the transcription factors DEAF-1 and MAF that bind efficiently to the C allele, but not to the G allele. Thus, the C-HTR1A receptor function is altered by this polymorphism – the G allele leading to reduced serotonin neurotransmission due to impaired binding of the DEAF-1-related (NUDR) repressor protein (1). Previous studies indicate that this polymorphism is associated with several psychiatric disorders including major depression (2), anxiety disorders (3) and suicide (4).

**Our aim:**

To test the hypothesis of the involvement of the C(1019)G polymorphism in impulsivity-related behavior in a large sample of 725 volunteers using two specific questionnaires measuring impulsivity.

**METHODS**

**SUBJECTS**

- 725 subjects: 596 women and 129 men
- age: 18–60 years; mean age: 30.26 ±10.601
- recruited from general practices, universities, and a community-based population
- the inclusion of subjects was independent of any positive psychiatric anamnesis
- all subjects were Hungarian and of Caucasian origin

**MEASURES**

- 22-item Background Questionnaire
- Impulsiveness subscale of the Eyraeck Impulsiveness, Venturesomeness, and Empathy scale (IVE-1)
- Barratt Impulsiveness Scale (BIS-11)
- Motor Impulsiveness
- Cognitive Impulsiveness
- Nonplanning Impulsiveness
- BIS Total
- Genotyping: buccal mucosa samples, Sequenom MassARRAY technology

**STATISTICS**

- ANOVA with the rs295 SNP (GG vs. GC vs. CC) as an independent variable and IVE-1 and BIS-11 scales entered as dependent variables
- Tukey HSD post-hoc test (SPSS 15.0)
- Age and gender were included in the ANOVA model as covariates

**RESULTS**

Post-hoc analysis revealed that the study had 0.958 power to detect 0.15 effect size. Significant differences between the C(1019)G genotype groups (GG vs. GC vs. CC) were found.

Subjects carrying GG genotype showed significantly higher impulsiveness scores compared to GC or CC carriers for the IVE-1 scale (P<0.014), for the BIS total score (P<0.008; a), for the Motor Impulsiveness (P<0.021; b), for the Cognitive Impulsiveness (P<0.002; c), but not for the Nonplanning Impulsiveness (P=0.520; d) subscale of the BIS-11.

**CONCLUSIONS**

In our study we found a significant association between C(1019)G, and the Impulsiveness subscale of the Eyraeck IVE scale, and also the Motor and Cognitive Impulsiveness subscales but not the Nonplanning Impulsiveness subscale of the BIS-11.

Our results thus indicate a profound relationship between this polymorphism and impulsiveness, as indicated by the significant relationship we found in case of two different scales. Furthermore, our result of no significant association between nonplanning impulsiveness and the C(1019)G polymorphism indicates that this relationship is valid only for the basic and elementary manifestations of impulsiveness-related behavior but not for nonplanning impulsiveness which incorporates more complex and higher mental processes. Other genes regulating these processes are likely to play an important role in the background of nonplanning impulsiveness.

**REFERENCES**


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